

# Chapter 1 Challenges

## Chapter Summary

### Lesson 1-1

- **Earth science** is the study of Earth and its history. The four branches of Earth science are geology, oceanography, meteorology, and astronomy.

### Lesson 1-2

- A **sphere** is a round, three-dimensional object. The **lithosphere** is the solid part of Earth. The **hydrosphere** is made of liquid water or ice. The **atmosphere** is an envelope of gases surrounding Earth.

### Lesson 1-3

- Earth has three layers. The **crust** is the outer layer. The **mantle** is below the crust. Its upper part is solid rock. The rock below this flows like a thick liquid. The **core** in the center has an outer liquid layer and an inner solid layer.

### Lessons 1-4 and 1-5

- A **globe** is a spherical model of Earth. A **map** is a flat model of Earth. All maps have **distortions**.
- A **map projection** shows Earth's surface, or part of it, on a sheet of paper. Three examples of map projections are Mercator, polar, and conic.

### Lessons 1-6 and 1-7

- The equator divides Earth's surface into northern and southern **hemispheres**. The distance a place is north or south of the equator is its **latitude**.
- **Meridians** are lines that run from pole to pole. The distance in degrees a place is east or west of the prime meridian is its **longitude**.
- A map's **scale** compares map distances with real distances. Map **symbols** represent real objects. The symbols are explained in a **legend**. Colors can be used to show different features.

### Lesson 1-8

- Height above or below sea level is called **elevation**. The study of the form and shape of Earth's surface is called **topography**. Relief maps show elevation often using colors or shading.

### Lesson 1-9

- Topographic maps use **contour lines** to show elevation. A **contour interval** is the difference in elevation between contour lines.

## Key Term Challenges

atmosphere (p. 18)	lithosphere (p. 18)
contour interval (p. 34)	longitude (p. 26)
contour line (p. 32)	mantle (p. 20)
core (p. 20)	map (p. 22)
crust (p. 20)	map projection (p. 24)
distortion (p. 22)	meridian (p. 26)
Earth science (p. 16)	parallel (p. 26)
elevation (p. 32)	scale (p. 28)
globe (p. 22)	specialist (p. 16)
hydrosphere (p. 18)	sphere (p. 18)
latitude (p. 26)	symbol (p. 28)
legend (p. 28)	topography (p. 32)

**MATCHING** Write the Key Term from above that best matches each description.

1. layer of Earth below the crust
2. layer of gases surrounding Earth's surface
3. shows distance on a map
4. all the liquid water and ice on Earth
5. innermost region of Earth
6. flat drawing of part of Earth's surface
7. error in shape, distance, or size on a map

**IDENTIFYING WORD RELATIONSHIPS** Explain how the words in each pair are related. Write your answers in complete sentences.

8. contour line, elevation
9. map projection, globe
10. crust, lithosphere
11. contour interval, topography
12. latitude, parallel
13. longitude, meridian
14. symbol, legend
15. sphere, globe



## Content Challenges **TEST PREP**

**MULTIPLE CHOICE** Write the letter of the term or phrase that best completes each statement.

- The study of weather is called
  - geology.
  - oceanography.
  - meteorology.
  - specialist.
- Earth's crust is part of the
  - atmosphere.
  - mantle.
  - hydrosphere.
  - lithosphere.
- Rivers, lakes, and streams are part of Earth's
  - core.
  - mantle.
  - hydrosphere.
  - atmosphere.
- The two main gases in the atmosphere are
  - oxygen and nitrogen.
  - oxygen and hydrogen.
  - hydrogen and nitrogen.
  - oxygen and helium.
- The thickest layer of Earth is the
  - crust.
  - mantle.
  - outer core.
  - inner core.
- Globes are
  - two-dimensional.
  - one-dimensional.
  - three-dimensional.
  - flat.
- A map projection made by holding a sheet of paper to one pole of a globe is called a
  - Mercator projection.
  - polar projection.
  - conic projection.
  - relief projection.

- Lines on maps or globes that run from the North Pole to the South Pole are called
  - meridians.
  - latitudes.
  - longitudes.
  - contour lines.
- The North Pole is at
  - 0° latitude.
  - 10° longitude.
  - 90° north latitude.
  - 90° north longitude.
- The distance in degrees east or west of the prime meridian is a place's
  - longitude.
  - latitude.
  - equator.
  - parallel.

**FILL IN** Write the term or phrase that best completes each statement.

- Elevation is the distance of a point above or below \_\_\_\_\_.
- The symbols used on a map are listed in a \_\_\_\_\_.
- Latitude and longitude are measured in \_\_\_\_\_.
- The longest parallel on Earth's surface is the \_\_\_\_\_.
- A narrow field of study within a larger field is called a \_\_\_\_\_.
- Maps of \_\_\_\_\_ areas have the fewest distortions.
- The layer of Earth between the core and the crust is the \_\_\_\_\_.
- The hydrosphere is the part of Earth that is \_\_\_\_\_.



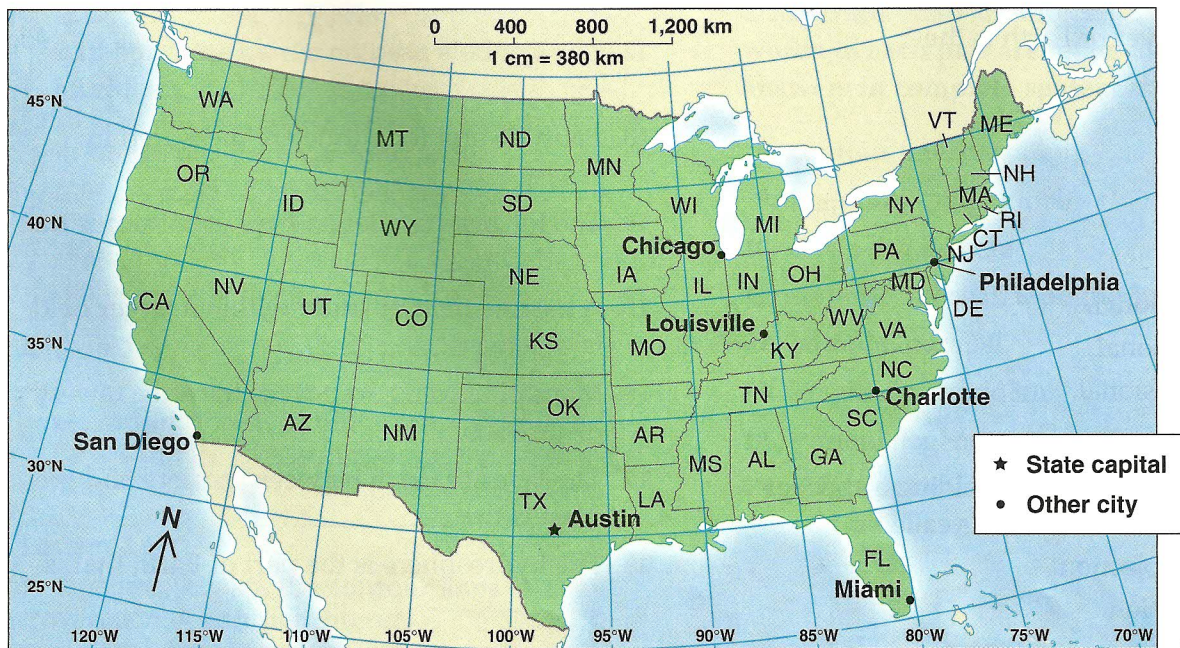
**Concept Challenges** **TEST PREP**

**WRITTEN RESPONSE** Answer each of the following questions in complete sentences.

1. **EXPLAIN:** What is the longitude of Greenwich, England? Why?
2. **INFER:** Why must both latitude and longitude be known to find the location of a place on a map?
3. **ANALYZE:** Why do two contour lines never cross each other?
4. **EXPLAIN:** Why does a polar projection have less distortion nearer the poles than it has farther from the poles?
5. **INFER:** Is the diameter of Earth larger when measured from pole to pole or when measured at the equator? Explain.

**INTERPRETING VISUALS** Use Figure 1-34 to answer the following questions.

6. **OBSERVE:** What color on the map is used to show bodies of water?
7. **CALCULATE:** What real distance on the map is shown by 2 cm?
8. **INTERPRET:** How many kilometers is it from Miami, Florida, to Austin, Texas? From Charlotte, North Carolina, to Louisville, Kentucky?
9. **INTERPRET:** In what direction is Chicago, Illinois, from San Diego, California?
10. **ANALYZE:** What is the latitude and longitude of Philadelphia, Pennsylvania?



◀ **Figure 1-34**